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ABSTRACT

Investigating the possibility of designing effective intervention programs for at-risk students, this study used simultaneous methods in a classroom setting for working with drug use problems, poor attendance, and emotional distress. The study was a two-group, repeated measures, clinical trial which was presented to high risk students as a "personal growth class." The test results indicated improved drug use control and declining consequences of drug use, but no shifts in frequency of drug use. Truancy declined while grade point average (GPA) and credits went up. In addition, there was a decline in reported feelings of depression, hopelessness, and stress. It was found that the program was effective over the short term, but the participants needed additional bolstering after the end of the program. Another limitation was the need for more work on decreasing the frequency of drug use. Yet, the program demonstrated it is possible to have effective school-based prevention programs and that they are more cost effective than traditional drug treatment programs. (KM)

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PREVENTING ADOLESCENT DRUG INVOLVEMENT, SCHOOL DROPOUT AND EMOTIONAL DISTRESS

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PREVENTING ADOLESCENT DRUG INVOLVEMENT, SCHOOL DROPOUT AND EMOTIONAL DISTRESS

Abstract

Objective.--Participants in a school-based preventive intervention program will show, relative to controls, significantly less drug involvement, greater school performance, and less emotional distress at program exit (5 months) and at follow-up (10 months).

Design.--A two-group, repeated measures, clinical trial.

Setting.--Five urban high schools in northwest United States.

Study Participants.--Youth at-risk for dropout were identified, then randomly selected and assigned to the experimental or control group. Agreement to participate was 84% for the control group (N=110), 70% for the intervention group (N=114).

Intervention.--Personal Control Class, is a 5-month, culturally and developmentally sensitive, elective class. Intervention modalities, delivered by trained teachers, are: life-skills training, peer-group support, teacher support. Content includes self-esteem enhancement, decision-making, personal control, interpersonal communication and group processes. Content is applied to outcome-related areas.

Main Outcome Measures.--Self-report drug use measures: frequency of use (smoking, alcohol, marijuana, hard drugs), problems of drug use control, adverse drug use consequences. Obtained from academic records: grade point average, credits earned, truancy. Self-report emotional distress measures: depression, hopelessness, stress, anger.

Results.--Trend analyses were used. Differences in drug use control ($F_{1,172} = 3.65$), adverse drug use consequences ($F_{1,174} = 6.68$), smoking ($F_{1,179} = 4.69$), class attendance ($F_{1,187} = 4.69$), and grade point average ($F_{1,196} = 6.46$) were significantly better for experimental students ($p < .04$ to .0005) versus controls. There were no significant differences in alcohol or marijuana use. Differences for hard drug use were as predicted but not significant. After intervention refinement, differences in depression, anger, and stress were significance ($p < .05$).

Conclusion.--The efficacy of a skills-training and social support intervention was demonstrated. Intervention effects held across the majority of outcome indicators.

Running Head: *Preventing Drug Involvement/School Dropout/Emotional Distress*

Key words: High-Risk Youth, Adolescent Drug Involvement, School Dropout, Emotional Distress, Clinical Trial

PREVENTING ADOLESCENT DRUG INVOLVEMENT, SCHOOL DROPOUT AND EMOTIONAL DISTRESS

Adolescent drug involvement remains a major health and social problem in the U.S. today.[1,2] Despite slight declines in trends from 1987-1990[3], over a third of high school seniors still drink heavily on a regular basis and almost 1 in 5 are daily smokers.[4] During 1990, 80.6% of high school seniors used alcohol, 32.5% used some illicit drug, and use of marijuana, cocaine and stimulants were 27%, 5.3% and 9% respectively.[5]

Recent studies from several disciplines have identified related risk factors that are either predictive of or associated with adolescents' drug involvement. Chief among these are low school performance, school dropout or poor school bonding, and psychopathology.[6-10] *School dropouts* are a high-risk population who are particularly vulnerable to alcohol and other drug abuse;[11,12] estimates are that drug involvement among school dropouts is up to 63% higher.[5] Besides being at-risk for greater drug involvement, *actual* and *potential* school dropouts are also at-risk of psychopathology or emotional distress;[6,7,10.13,14] leading to suicidal thoughts and behaviors.[15-17] The resultant damages to individuals, families and communities and the costs of treatment and rehabilitation are estimated to be in the billions of dollars.[18] Thus, one challenge is to *prevent* adolescent drug involvement, particularly the transition from drug experimentation to habitual use or abuse. A second challenge is to address the joint occurrence of drug involvement, potential school dropout and emotional distress, because of the interdependent links these factors have to the health of individuals.

Combating adolescent drug involvement has meant improving the efficacy of preventive interventions.[19-23] Current studies implicate a complex set of etiologic factors across bio-psycho-social domains (rather than a single critical vulnerability characteristic).[24-27] These study findings also imply great promise for identifying youth who are particularly at high-risk and targeting preventible interventions at their co-occuring vulnerability characteristics.[25,28] The salient question for high-risk youth is: which interventions will work together to influence cessation and/or decrease drug involvement, emotional distress and school dropout?[5,11,25,29,30] To our knowledge, attempts at preventing drug involvement, poor school performance and emotional distress have not been addressed simultaneously, but several explanatory theories posit common etiologic pathways to these problems,[31-33] suggesting the logic and salience of this approach.

Accordingly, this study focused on high-risk youth, defined as potential school dropouts, without labelling them as such. (We recognize the potential damaging and self-fulfilling prophesy that labelling youth as "dropouts" or "high-risk" can have.) This caveat noted, the study purpose was to test the efficacy of a school-based preventive intervention program, and the overall hypothesis was that high-risk program participants, relative to controls, would evidence better outcomes. That is, *program participants would show significantly less drug involvement, greater school performance, and less emotional distress at program exit (5 months) and at follow-up (10 months).*

Theoretic Framework

The preventive intervention program was guided by a comprehensive theoretic framework grounded in social network support perspectives,[34,35] utilizing concepts and processes derived from social learning and control theories.[32] The basic premise is that behavior does not develop (nor is it maintained) in isolation; rather, it is a function of the individual *and* the social network of relationships in which the individual is embedded. Ethnographic work by Eggert and Nicholas[14,36,37] implicated the peer network structure, teacher-student relationships and the school context in initiating and maintaining patterns of drug involvement, truancy and school failure. This work provided the backbone and structure for the intervention components and processes, and suggested the logical context for the intervention was *the school.*[38]

Insert Figure 1 Here

The posited preventive intervention components (see Fig. 1) include: 1) a *network component* comprised of positive teacher and peer group relationship ties, and 2) a *support process* comprised of a sustained delicate balance of group counseling and skills training. These comprehensive, sustained components work at cognitive,

behavioral and interpersonal levels to directly and indirectly enhance personal control and skills competencies, thereby influencing the desired *outcomes* (decreased emotional distress and drug involvement, and increased school performance).

There is some empirical support for aspects of this prevention approach.[39] Quasi-experimental trials indicated significant differences between experimental (N=73) and comparison groups (N=73): program participants decreased their truancy and drug involvement, and increased their school achievement; whereas, comparison students showed significant truancy increases and declines in achievement. Further, statistical modeling indicated that certain program components, the teacher's expressive and instrumental support, influenced decreased drug involvement[40] and increased school achievement.[41] Taken together, the evidence suggests that the program provided a positive experience for high-risk youth participants. The study reported herein represents a more comprehensive examination of the developed intervention program with an improved study design and more stringent outcome evaluations.

METHODS

Design

A two-group, repeated measures, clinical trial was used to field test the preventive intervention program. using data collected at pre-intervention, post-intervention and at follow-up. In our analyses, we assessed the degree to which the experimental intervention program, as theorized and implemented, was effective in reducing drug involvement, improving school performance and decreasing emotional distress among high-risk youth.

Subjects and Procedures

The inception cohorts were high-risk youth (identified as actual or potential school dropouts) in grades 9-12 in five high schools in the Pacific Northwest. Analyses of academic performance, school attendance, and prior dropout status from the district computer database and referrals from school personnel were used to identify an initial pool of high-risk youth from which experimental and control subjects were sampled. Identification was based on meeting combinations of the following criteria: (1) below expected credits earned for current grade level; (2) in the top 25th percentile for days absent/semester; (3) grade point average (GPA) < 2.30; (4) a pattern of declining grades or a precipitous drop greater than 0.7; (4) prior school dropout status; and (5) referral from school personnel for being in serious jeopardy of school dropout, failure, or suspension. This procedure has been validated for identifying and predicting high-risk students.[42]

Each selected student was randomly assigned and individually invited to join the study as either a control participant (i.e. invited to participate in a survey of high school students) or as a experiment subject (i.e. invited to participate in a special intervention program). Invitation procedures were standardized within control and within experiment groups.

Intervention Program Structure, Implementation and Process

The school-based intervention program was structured as an elective, semester-long *Personal Growth Class* (PGC) offered within the regular school curriculum at each of 5 participating schools (4 regular, 1 alternative high schools). Students in PGC met daily (55 min. in regular classrooms, or three days/week for 90 min. in the alternative school) for a full semester--5 months or 90 school days. PGC was taken for credit and graded; the teacher-student ratio was 1:12.

The social network support component consisted of group support, friendship development and school bonding, fostered through positive teacher-student and peer-group relationships. Support behaviors modeled by the PGC teacher were fostered in the group: i.e., communicated acceptance, respect and encouragement; praise for contributions and understanding of problems shared; expressed willingness to help others; and active participation in constructive problem-solving of each youth's relevant issues.

Specific course content was based on 4 skills training units (self-esteem enhancement, decision-making, personal control, and interpersonal communication) applied to three program goals (increased school performance, increased mood management, increased drug use control). Appendix A summarizes the meaning and purpose of skills training units. Skills training was standardized *only* in terms of definitions, learning objectives and suggested activities. Unique to this intervention was that skills training was *integrated when relevant*--i.e., in response to the specific problems youth shared. Sequencing of skills training moved naturally from *motivation*, to *skills building*, to *skills application*.

Data Collection

Data were collected from 3 sources: (1) process evaluation data measuring the exposure to specific skills training content, expressive and instrumental support, and group leadership skills collected on a daily basis by PGC teachers and weekly by a classroom observer; (2) the students' permanent school records (for pre- and post-intervention measures of school achievement and attendance); and (3) an extensive three-part questionnaire administered to study participants at: a) pre-intervention, b) post-intervention (end of a 5-month semester), and c) follow-up at 5 to 7 months post-intervention, depending on the school schedule. (Hereafter program exit will be referred to at *5 months*, and follow-up at *10 months* for the sake of simplicity.)

Informed consent was obtained from all subjects and a parent (or legal guardian) after the project was explained both orally and in written form. School district personnel did not have access to any of the questionnaire information supplied by the students.

Measurement

Drug involvement was conceptualized as three components: drug use frequency, drug use control, and adverse drug use consequences. *Drug use frequency* was defined as the frequency with which different types of substances (tobacco, alcohol, marijuana, and hard drugs) were used within a specific time frame and was designed to account for the breadth and pervasiveness of use. This conceptualiziation is similar to what others refer to as drug involvement;[43] frequency items were measured on an 8-point Likert-type scale ranging from 0 (no use) to 7 (use several times per day). *Drug use control* measured the manageability of intended use or abstinence. Control as a feature of drug involvement included indicators of management of intended use, social pressures to use, and timing and place of use. Incidence of lack of control (i.e. drinking more than intended, using at school) were assessed over the same period as drug use frequency using the same Likert scale. *Adverse drug use consequences* was defined by a set of measures assessing the aftermath of the adolescent's experience with temporary or chronic use of drugs and alcohol. Items measured the incidence of physical and psychosocial consequences (i.e. getting sick or getting into fights) over the same reference period and scale. (See Eggert & Herting[13] for a discussion of these facets of drug involvement.)

Each set of items was averaged (except drug use frequency which is summed) to provide a scale for each facet of drug involvement. These three drug scales demonstrated adequate reliability with Cronbach's alpha ranging from .86 to .88. Construct validity was established using confirmatory factor analysis; the apriori specified three factor structure model adequately represented the data and measured indicators showed consistently high standardized loadings on the dimensions (>.75).[44]

School performance measures were obtained directly from computerized school records: (a) *Grade point average (GPA)* was computed each semester on a 0.0 to 4.0 -- 1.00 equalled a passing grade; (b) *Credits earned* was measured by the number of classes passed each academic semester (typically ranging from 5 - 6); and (c) *Class absenteeism (truancy)* was measured by the number of recorded missed classes per semester (ranging from 18 - 24, or the equivalent of 3-4 days, for the typical high school student).

Emotional distress was conceptualized in terms of four commonly identified facets: (a) *depression*, measured by a 6-item scale (Alpha = .86) adapted for use with adolescents from the Depressed Mood Scale (CES-D);[45,46] (b) *hopelessness*, measured with a 3-item scale (Alpha = .86) adapted in part from two existing measures;[47,48] (c) *stress*, measured with a 5-item scale (Alpha = .60); and (d) *anger*, measured with a three item

scale (Alpha = .44) adapted from Thompson and Leckie.[49] All emotional distress scales ranged from 0 (never) to 6 (always) with higher scores indicating higher distress. Pearson correlation coefficients among distress scales ranged from .28 (hopelessness and anger) to .59 (hopelessness and depression), thereby indicating convergent validity.

Analyses

Trend analyses were used to test the effectiveness of the intervention program. This analytic method compares the pattern of change--that is, the trend across time--for experimental and control groups. A linear trend implies that the pattern of change is proportional and that the relationship is consistently increasing or decreasing. On the other hand, a quadratic trend implies a U-shaped (or inverted U-shaped) curve, suggesting, for example, improvement followed by relapse. A flat line indicating no change is neither linear nor quadratic. Significant group by trend interaction effects imply changes for one group differ significantly from changes of the other. The linear and quadratic components in trend analyses are orthogonal, representing independent partitions of the variance.[50] With two groups, inspection of the data (e.g., as plotted in Figures 2-6) is generally sufficient to determine which group is responsible for the observed trends.

Because the analytic technique compares the nature of change and not the absolute data values, it was an appropriate strategy for studying two groups with baseline differences. Additionally, trend analyses allow the assessment of both immediate (at program completion) and extended (at follow-up) effects of the intervention on the desired outcomes.

RESULTS

Sample Characteristics

After receiving a standard description, 30% of the students invited to participate as experimental subjects refused, stating primarily three reasons: class schedule conflicts, lack of interest, or a perceived lack of need for the intervention program. Students refusing to participate in the control group (16%) generally stated a lack of interest or lack of time. Although the refusal rate was higher among students selected into the experiment, once agreeing to participate, the retention rate for the duration of the study was equivalent across both experiment and control groups (83%).

Table 1 provides basic descriptive characteristics of the experimental and control students. Initial data at pre-intervention are provided for 110 controls and 114 experiment students who participated in the program during the first two years of implementation. Youth from five schools and 16 classes are represented in this analysis.

Insert Table 1 Here

Although these two groups were randomly categorized from the same identified pool of high-risk students, students who agreed to participate in the intervention differed on a number of characteristics. As indicated in Table 1, experiment students were slightly older and more likely male. The experiment group also reported more school absences, lower GPA, and greater school strain (based on an index defined as unmet school goals such as "doing well even in hard subjects"). Additionally, intervention participants reported less outside support resources (parent support, favorite teacher support); more drug involvement, including greater adverse drug use consequences, and more drug use control problems; and more depression and hopelessness. In effect, high-risk experimental students were "more distressed" at the outset than high-risk controls. Thus, there appears to be a potential combination of self-selection bias which suggests that those from the high-risk pool who have fewer problems refuse to participate in the prevention program when invited and/or those refusing participation in the control group are less well off. We take this bias into consideration in the trend analyses of outcomes.

Results for drug involvement and emotional distress covered the pre-, 5-mon. post-, and 10-mon. post-intervention periods. Due to data availability, school performance data were restricted to two pre-intervention

and only one post-intervention period. For any time series, only cases with observations at each time point were included; there is no imputation of missing data and sample sizes shift in response to completed responses within each questionnaire.

Drug Involvement

Participants in the experimental condition showed decreasing trends in *drug use control problems* (F_{linear}=3.65, p=.058) and *adverse drug use consequences* (F_{linear}=6.68, p=.01; F_{quad}=4.81, p=.03); similar decreases over time were not observed among the controls. These reported changes are summarized in Table 2 and Figure 2. Significant trend differences were observed in tobacco-smoking behaviors (F_{linear}=4.23, p=.04): controls showed increases in smoking behavior over time; whereas those in the experiment group maintained their rate of smoking. There were no significant group by trend interaction effects for alcohol, marijuana or hard drug use. There were, however, linear differences in hard drug use that approached significance (F_{linear}=2.62, p=.11), revealing a tendency for the intervention participants to decrease their use of hard drugs over time whereas this same tendency was not observed among controls. Overall, observed changes for the intervention group were primarily a result of improved drug use control (manageability) and declining adverse drug use consequences, rather than shifts in frequency of use.

Insert Table 2 and Figure 2 Here

School Performance

To examine changes in school performance over time, semester *GPA*, *absences*, and *credits earned* were measured two consecutive semesters pre-intervention and then post-intervention. Significant group by trend differences in school performance were observed between the experimental students and the controls. These are summarized in Table 3 and Figure 3. During the two semesters preceding the intervention, there were no significant differences in *GPA* and the experiment group reported fewer *credits earned*. During the intervention semester, the experiment group increased both *GPA and credits earned*, while control students remained essentially the same. Prior to the intervention semester, school records indicated that experiment students were increasing truancy; control students, in contrast, were decreasing their truancy. During the intervention semester, controls' truancy dramatically increased while intervention students began to decrease their truancy. Thus overall, these findings point to significant improvements in school performance for the intervention participants and declines for the controls.

Insert Table 3 and Figure 3 Here

Emotional Distress

The efficacy of the intervention program was further tested by examining changes in the level of emotional distress in terms of levels of *depression*, *hopelessness*, *stress* and *anger*. Students in the experiment and control conditions reported similar patterns of decreasing *depression* and *hopelessness* over the course of the study; however, intervention students reported less *stress* and less *anger* immediately following the classroom intervention (Table 4 and Figure 4). Intervention students showed declines in their levels of stress (F_{quad}=3.51, p=.06) and anger (F_{quad}=3.64, p=.06) from pre- to post- intervention, but the downward trends only approached statistical significance and were not sustained at follow-up.

Insert Table 4 and Figure 4 Here

A sub-analysis of the program effects on emotional distress indicators was warranted and showed stronger effects of the intervention. In response to observing high levels of depression and suicide ideation among these high-risk youth during the first year, personal control skills training was bolstered in the second year to include greater emphasis on management of depression, stress and anger.

Insert Figure 5 Here

We evaluated these curriculum revisions (occurring in Year 2) with separate trend analyses for Year 1 ($N_{experiment}=35$, $N_{control}=57$) and Year 2 ($N_{experiment}=35$, $N_{control}=47$). In Year 1 (prior to curriculum revisions) there were no significant trend differences on any of the indicators of emotional distress (depression, hopelessness, stress, anger). With the revised curriculum, however, Year 2 intervention participants reported *decreases in depression* by 40 percent for up to 6 months after program completion; controls reported an 8 percent decrease ($F_{linear}=4.22$, $p=.04$). All intervention participants showed sharper *decreases in hopelessness* but there were no significant trend differences. At 5-month post-intervention, experimental students also reported an 18 percent *decrease in stress* ($F_{quad}=5.68$, $p=.02$) and a 35 percent *decrease in anger* ($F_{quad}=12.25$, $p=.001$); at 10-month post-intervention experimental youth showed slight relapse in these gains, but not to pre-intervention levels. Controls reported less change in their levels of stress and anger across time, creating the significant trend differences. In general, intervention participants exposed to the 2nd year of the program, in which management of mood was more specifically targeted, displayed significant decreases in emotional distress.

DISCUSSION

Empirical support is evident from this study for a school-based intervention program that was built from a social network support model and designed to address directly a set of co-occuring risk factors among high-risk youth. The program appeared effective in the short-term for reducing drug involvement, improving school performance and tempering emotional distress; bolstering seems to be needed in order for the effects to be continued on a long-term basis. These findings thus lend further support for the integrated network social support model (or social influence model) established by Eggert and her colleagues.[13,39,41]

More specifically, the intervention appeared to help the high-risk participants decrease their drug involvement and improve school performance (attendance and grades) during the 5-month school semester. Also, high-risk youth endorsed less emotional distress when the intervention was refined to include greater depression, anger and stress management training. Even in school performance indicators, where pre-intervention levels were similar for experiment and control students, the intervention students improved performance, lending credence to the theoretic premise that an increased sense of personal control and skills competencies were applied to a variety of situations. In contrast, the high-risk control students showed fewer improvements, and at times, manifested reversals in behavior. Some results implied (e.g., in smoking and truancy) that control students were beginning a debasement, rather than holding steady or improving.

Our original contention was that by intervening at the level of social network support and life skills, we would negatively impact drug involvement, positively influence school performance and negatively affect emotional distress. Our peer-group model focused on the risk factors of strain and poor school bonding, and enhanced the protective factors of life skills and pro-social bonding. It provided the students in the experiment condition a forum in which to develop and test new behaviors that are more "socially acceptable." However, several limitations warrant some comment.

First, the program appears most effective while students are active participants; once they complete the course, the effects are less consistent. This pattern suggests additional "booster" sessions may be needed for students to maintain intervention gains made. More time to practice and internalize the new cognitive and behavioral responses they have learned may be beneficial. Students are not rejecting the new skills--as the positive gains reported earlier indicate--but they appear unable to maintain or increase these gains. Offering the class for a full academic year may be warranted. This would permit additional training during the second semester to prevent "slips" and relapses (as suggested by Catalano and his colleagues[23]). Moreover, a second semester would undoubtedly be more realistic in addressing the development of more supportive social networks and sets of particular vulnerabilities (e.g. lack of conventional bonds, conflictive parental relations) which were, in part, influencing the students' initial high-risk status.

A second area of focus must be assisting the students to decrease specific drug use activities (e.g.,, alcohol, marijuana, and hard drug use) while maintaining the gains made in other areas of drug involvement. Decreasing drug use control problems and consequences of use seem to be affected by the program first, with less dramatic shifts in frequency of use. This is a positive effect and is consistent with arguments by Peele[51] and

evidence from studies of alcoholism[52] that suggest pure abstinence may not be a legitimate goal, and that management of use is a key element in reduction of frequency of use. Again, a more long term approach to this group of high-risk youth would further this management; it would also permit time for immersing them in alternative, non-drug involved recreational activities and community experiences to foster the more conventional bonding and further lessen involvement. As ties to deviant peers are weakened and the high-risk youth are connected to more supportive friends and conventional activities, the use of specific drugs may decrease as well.[32]

Despite these limitations, this school-based preventive intervention produced results which have implications for cost-effective approaches, school-based programs and new institutional policies. First, this program was more cost-effective than outpatient or inpatient drug treatments. The cost was approximately $1,000 per student for daily interventions, during a 90-day semester spanning 5 months. Equivalent outpatient or inpatient treatment could range from $5,400 to $7,700 or more for a similar time period.

Second, this study also indicated the feasibility of a successful school-based prevention approach for dealing with serious adolescent health problems. The regular school context and structure is a viable and desirable setting for delivering sustained, intensive and comprehensive cost-effective interventions. However, helping high-risk youth to decrease drug involvement and temper emotional distress is not just the school's responsibility. The success of reconnecting high-risk youth is dependent on collaboration between schools, families, community and private social service agencies, business and industry, and supportive legislators.

In summary, the current research program extends explanatory models of delinquency, drug use and emotional distress, testing not only our social network support framework but also specific hypotheses advanced in complementary heuristic models of adolescent problem behavior. This research also contributes to the larger interdisciplinary research efforts on prevention of adolescent drug involvement, school failure/dropout, and emotional distress.

In evaluating the results, several conclusions seem warranted: 1) the pattern of improvement for intervention students crossed all three major outcomes, drug involvement, poor school performance, and emotional distress; 2) these improvements were observed even when reported levels at program entry for both intervention students and controls were similar; and 3) there were no significant movements towards a mean level among control students on any outcome factor. Thus, these results are more likely due to actual gains from program participation (rather than to a regression to the mean). In short, the results strongly support our hypotheses and suggest areas to concentrate our attention.

We found that these high-risk youth could be helped. Their major co-occurring problems of drug involvement, school failure and potential dropout, and/or serious emotional distress needed to be and were successfully addressed simultaneously. Thus, we hope the results presented here will stimulate further tests of this preventive intervention approach. We also hope that it will stimulate greater collaboration of adolescent health promotion and preventive interventions within the school context. Ultimately, reclaiming high-risk youth before they dropout of school, become drug involved and seriously emotionally impaired will promote much healthier transitions to productive adult life.

REFERENCES

1. American School Health Association, Association for the Advancement of Health Education and Society for Public Health Education Inc. *The national adolescent student health survey: a report on the health of America's youth*. Oakland, CA: Third Party Publishing; 1989.

2. Gans JE, Blyth DA, Elster AB, Gaveras LL. *America's adolescents: how healthy are they?* Chicago, IL: AMA; 1990.

3. National Institute on Drug Abuse (NIDA). *Highlights of the 1988 National household survey on drug abuse*. Washington, DC: Supt of Documents, US Government Printing Office; 1989.

4. Johnston LD, Bachman JG, O'Malley PM. *1989 National high school senior drug abuse survey: monitoring the future survey*. Ann Arbor, MI: University of Michigan Institute for Social Research; 1990.

5. National Institute on Drug Abuse (NIDA). *Drug abuse and drug abuse research*. Washington, DC: Supt of Documents, US Government Printing Office; 1991.

6. Bry BH, McKeon P, Pandina RJ. Extent of drug use as a function of the number of risk factors. *J Abnormal Psychol*. 1982;91:273-279.

7. Newcomb MD, Harlow LL. Life events and substance use among adolescents: mediating effects of perceived loss of control and meaninglessness in life. *J Pers Soc Psychol*. 1986;51(3):564-577.

8. Newcomb MD, Maddahian E, Bentler PM. Risk factors for drug use among adolescence. Concurrent and Longitudinal analyses. *Am J Public Health*. 1992;

9. Newcomb MD, McCarthy WJ, Bentler PM. Cigarette smoking, academic lifestyle, and social impact efficacy: an eight-year study from early adolescence to young adulthood. *J Appl Soc Psychol*. 1989;19:251-281.

10. Labouvie EW, Pandina RJ, White HR, Johnson V. *Risk factors of adolescent drug use: a cross-sequential study*. Washington, DC: APA; 1986. UnPub.

11. Brown BS, Mills AR. At-Risk populations: some suggested directions. In: *Youth at High Risk for Substance Abuse (NIDA)*. Washington, DC: Supt of Documents, US Government Printing Office; 1987:DHHS ADM-87-1537.

12. Mensch BS, Kandel DB. Dropping out of high school and drug involvement. *Sociol Educ*. 1988;61:95-113.

13. Eggert LL, Herting JR. Drug exposure among potential dropouts and typical youth. *J Drug Edu*. 1992; In Press.

14. Eggert LL, Nicholas LJ. Speaking like a skipper: "skippin' an' gettin' high". *J Language Psychol*. 1992;11:75-100.

15. Nicholas LJ. Recruitment of high-risk versus typical youth: procedures and challenges. *Commu Nurs Res*. 1990;23:179. Abstract.

16. Eggert, LL, Herting, JR, Nicholas, LJ. Reconnecting at-risk youth to prevent drug abuse, school dropout, suicide lethality. *Advisory Council NIMH and Prevention Research Branch, NIDA (Requested/Submitted)*. 1992. Technical Report.

17. Thompson EA, Moody KA, Eggert LL. Discriminating high suicide ideation among vulnerable youth. *SRA/SAM Conference, Washington D C*. 1992;Abstract.

18. Institute of Medicine . *Treating drug problems*. Washington, DC: National Academy Press; 1990.

19. Resnick HS, Gibbs J. Types of peer program approaches. In: *Adolescent Peer Pressure: Theory Correlates and Program Implications for Drug Abuse Prevention (NIDA)*. Washington, DC: Supt of Documents, US Government Printing Office; 1981:47-81.

20. Schaps E, DiBartolo R, Moskowitz J, Palley CS, Churgin SA. A review of 127 drug abuse prevention program evaluation. *J Drug Issues*. 1981;11:17-43.

21. Selnow GW, Crano WD. Formal vs informal group affiliations: implications for alcohol and drug use among adolescents. *J Studies Alc*. 1986;47:48-52.

22. Tobler NS. Meta-analysis of 143 adolescent drug prevention programs. *J Drug Issues*. 1986;16:537-567.

23. Catalano RF, Hawkins JD, Wells EA, Brewer D. Evaluation of the effectiveness of adolescent drug abuse treatment, assessment of risks for relapse, and promising approaches for the relapse prevention. *Intl J Addic*. 1991;25:1089-1144.

24. Goodstadt MS, Mitchell E. Prevention theory and research related to high-risk youth. In: Goplerud EN, ed. *Breaking New Ground for Youth At-Risk: Program Summaries*. Washington. DC: US Government Printing Office (OSAP); 1990:DHHS ADM-89-1658.

25. Hawkins JD, Lishner DM, Jenson JM, Catalano RF. Delinquents & drugs: what the evidence suggests about prevention & treatment programming. In: *Youth at High Risk for Substance Abuse (NIDA)*. Washington, DC: Supt of Documents, US Government Printing Office; 1987:DHHS ADM-87-1537.

26. Huba GJ, Wingard JA, Bentler PM. Framework for an interactive theory of drug use. In: Lettieri DJ, Sayers M, Pearson HW, eds. *Theories on Drug Abuse*. Rockville, MD: NIDA; 1980:95-101.

27. Norem-Hebeisen A, Hedin DP. Influences on adolescent problem behavior: causes, connections, and contexts. In: *Adolescent Peer Pressure (NIDA)*. Washington, DC: Supt of Documents, US Government Printing Office; 1981:DHHS ADM-86-1152.

28. Glantz M, Pickens R. *Vulnerability to drug abuse*. Washington, D.C.: APA; 1992.

29. Office of Substance Abuse Prevention (OSAP). *Prevention of Mental Disorders, Alcohol & Other Drug Use in Children & Adolescents (mono. 2)*. Washington, DC: Dept of Health and Human Services; 1989.

30. Leukefeld C. Drug abuse prevention research needs. In: Rey KH, Faegre CL, Lowers PL, eds. *Prevention Research Findings: 1988*. Rockville, MD: US Dept of Health and Human Services (OSAP) 1990; 1988:DHHS ADM-89-1615.

31. Felner RD, Felner TY. Primary prevention programs in educational context: a transactional-ecological framework and analysis. In: *Primary Prevention and Promotion in Schools*. Newbury Park, London: Sage; 1989:13-49.

32. Elliott DS, Huizinga D, Ageton SS. *Explaining delinquency & drug use*. Sage; 1985.

33. Kellam SG, Brown CH, Rubin BR, Ensminger MC. Paths leading to teenage use: developmental epidemiological studies in Woodlawn. In: Buze SB, Earls FF, Barrett JE, eds. *Childhood Psychopathology and Development*. New York, NY: Raven Press; 1983:17-51.

34. Lin N, Dean A, Ensel W. *Social support, life events, and depression*. Orlando, FL: Academic Press; 1986.

35. Eggert LL. Social support in families: stress, coping and adaptation. In: Albrecht TL, Alderman MB, eds. *Communicating Social Support: Process in Context*. Beverly Hills, CA: Sage; 1987:80-104.

36. Eggert LL, Nicholas LJ. *Mentorship programs for high-risk high school students*. 1984. UnPub.

37. Eggert LL. Adolescent's metaphors of "usin' and dealin' drugs". *Studies Cultural Commu*. 1992; In Press.

38. Bond LA, Compas BE. *Primary prevention and promotion in the schools*. Newbury Park, London: Sage; 1989.

39. Eggert LL, Seyl C, Nicholas LJ. Effects of a school-based prevention program for potential high school dropouts and drug abusers. *Intl J Addic*. 1990;25:772-801.

40. Eggert LL, Herting JR. Preventing teenage drug abuse: exploratory effects of network social support. *Youth & Society*. 1991;22:482-524.

41. Moody KA, Eggert LL. Exploratory effects of a social support intervention for high-risk youth. *J Adol Res*. 1992;Under Review.:

42. Herting JR. Predicting at-risk youth: evaluation of a sample selection model. *Commu Nurs Res*. 1990;23:178. Abstract.

43. Johnston LD, O'Malley PM, Bachman JG. *Drug use among American high school students, college students, and other young adults: national trends through 1985*. Rockville, MD: NIDA; 1986.

44. Eggert, LL, Thompson, EA, Herting, JR. Measuring drug involvement: confirmatory factor analyses. *Soc Res Adol Abs*. 1992.

45. Radloff LS. The CES-D Scale: A self report depression scale for research in the general population. *J Appl Psychol Meas*. 1977;1:385-401.

46. Ensel WM. Measuring depression: The CES-D Scale. In: Lin N, Dean A, eds. *Social Support, Life Events, and Depression*. Orlando, FL: Academic Press; 1986:51-70.

47. Beck OT, Weissman A, Lester D, Trexler L. Hopelessness and suicidal behavior. *JAMA*. 1974;234:1146-1149.

49. Thompson EA, Leckie M. *Interpretation manual for symptoms of stress inventory*. Seattle, WA: University of Washington, Stress Mgmt Proj; 1989. UnPub.

50. Stevens J. *Applied multivariate statistics for the social sciences*. Hillsdale, N.J.: Lawrence Elbaum; 1986.

51. Peele S. The "cure" for adolescent drug abuse: worse than the problem? *J Counseling Develop*. 1986;65:23-24.

52. Institute of Medicine . *Broading the base of treatment for alcohol problems*. Washington, DC: National Academy Press; 1990.

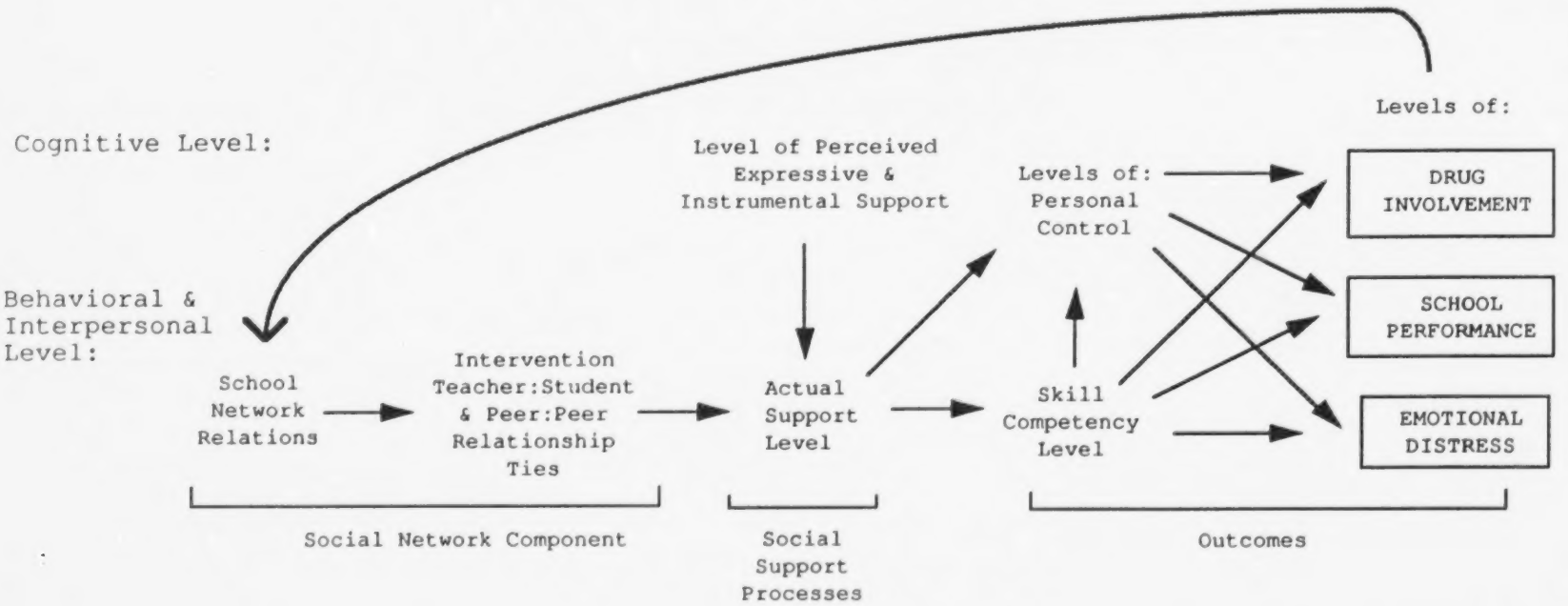
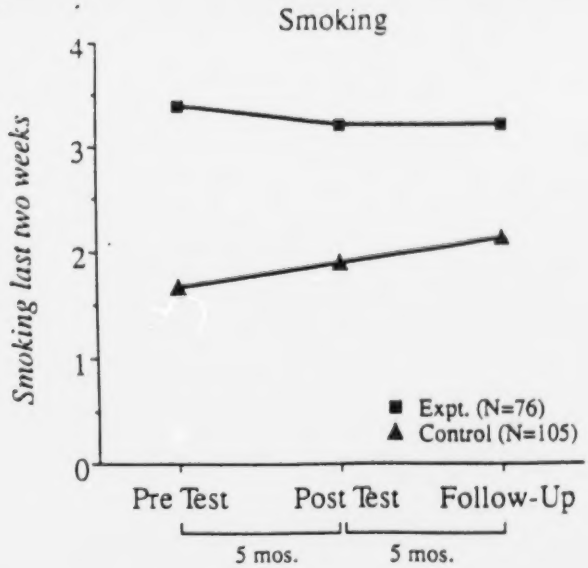
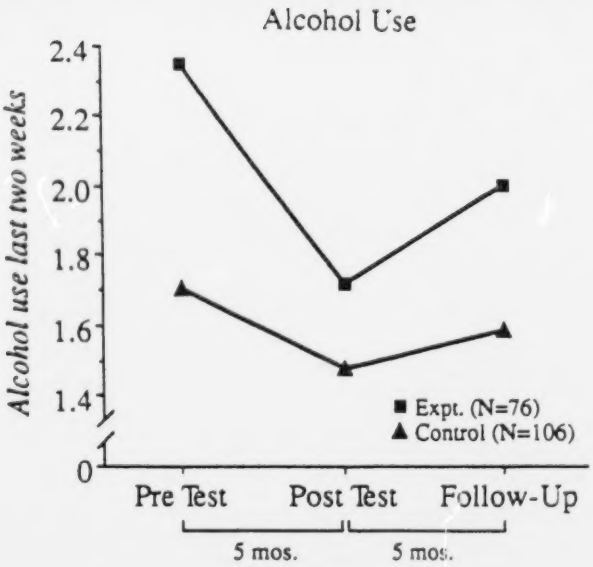
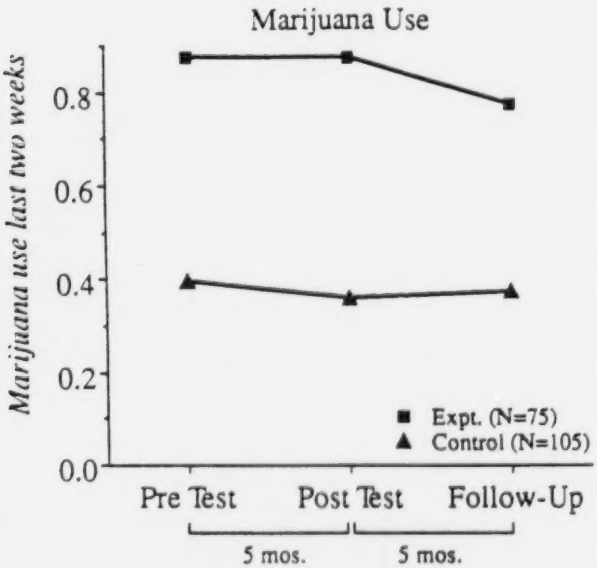


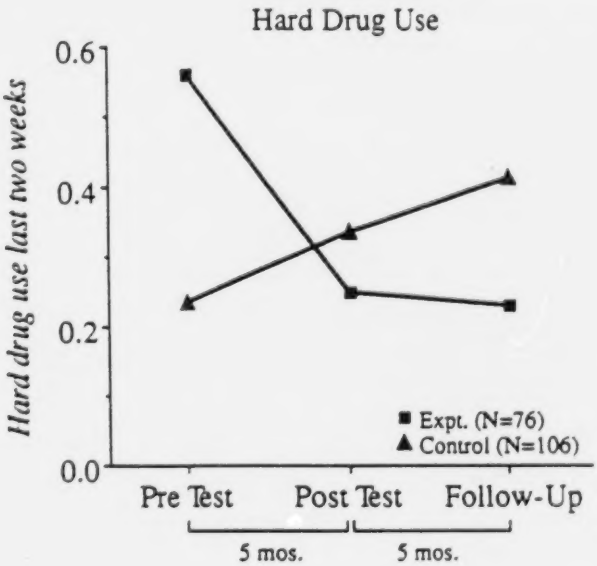
Figure 1. Posited Social Support Structure

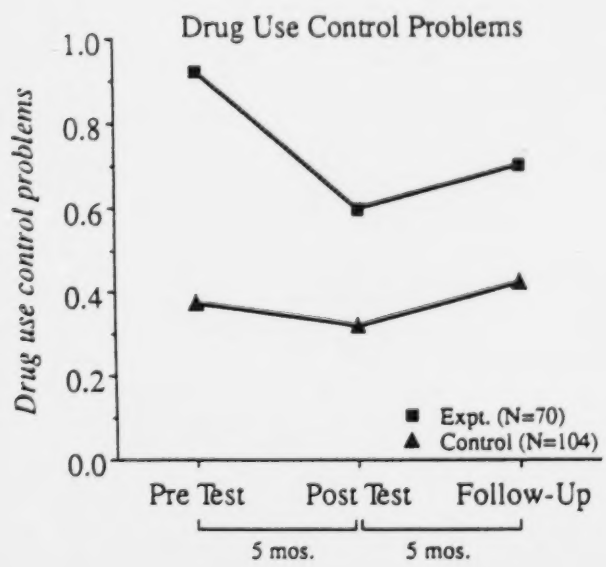
Figure 2. Experimental vs. Control Group Outcomes for Drug Involvement


Smoking
Smoking last two weeks
4
3
2
1
0
Expt. (N=76)
Control (N=105)
Pre Test
Post Test
Follow-Up
5 mos.
5 mos.


Alcohol Use
Alcohol use last two weeks
2.4
2.2
2.0
1.8
1.6
1.4
0
Expt. (N=76)
Control (N=106)
Pre Test
Post Test
Follow-Up
5 mos.
5 mos.


Marijuana Use
Marijuana use last two weeks
0.8
0.6
0.4
0.2
0.0
Expt. (N=75)
Control (N=105)
Pre Test
Post Test
Follow-Up
5 mos.
5 mos.


Hard Drug Use
Hard drug use last two weeks
0.6
0.4
0.2
0.0
Expt. (N=76)
Control (N=106)
Pre Test
Post Test
Follow-Up
5 mos.
5 mos.


Drug Use Control Problems
Drug use control problems
1.0
0.8
0.6
0.4
0.2
0.0
Expt. (N=70)
Control (N=104)
Pre Test
Post Test
Follow-Up
5 mos.
5 mos.

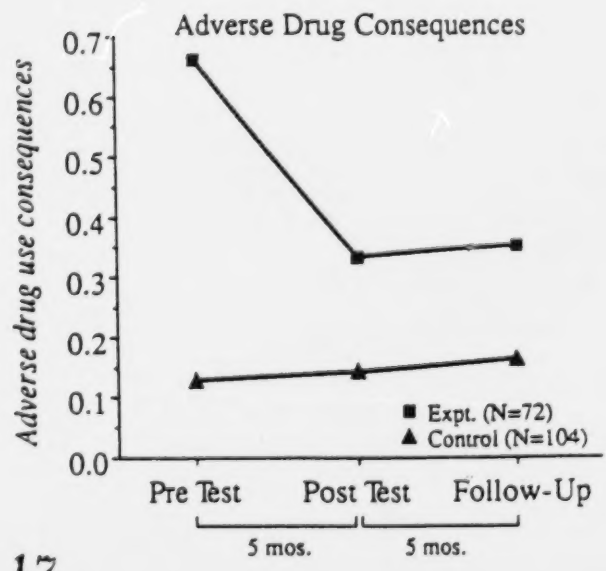
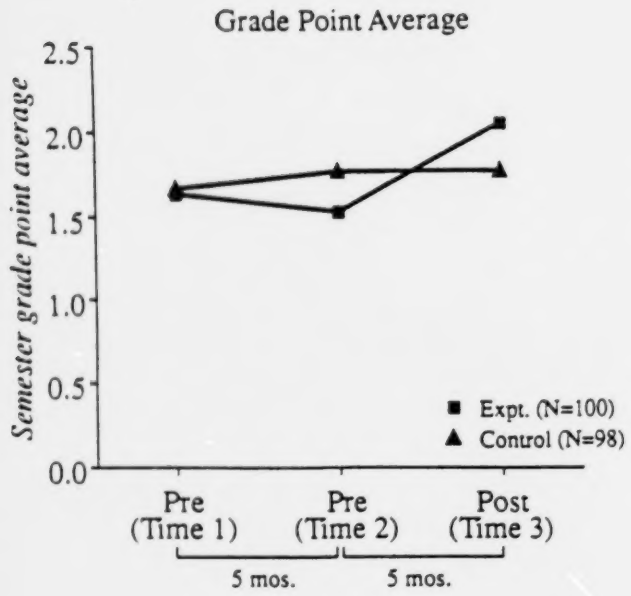
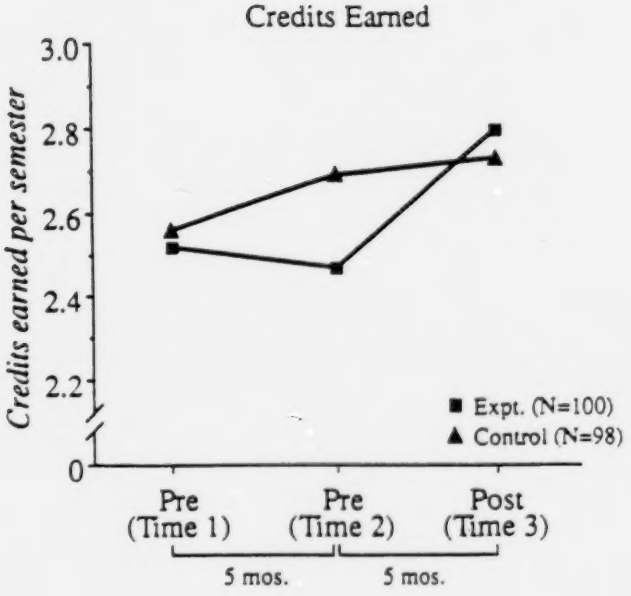

Adverse Drug Consequences
Adverse drug use consequences
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Expt. (N=72)
Control (N=104)
Pre Test
Post Test
Follow-Up
5 mos.
5 mos.

Figure 3. Experimental vs. Control Group for School Performance


Grade Point Average
Semester grade point average
2.5
2.0
1.5
1.0
0.5
0.0
Expt. (N=100)
Control (N=98)
Pre (Time 1)
Pre (Time 2)
Post (Time 3)
5 mos.
5 mos.


Credits Earned
Credits earned per semester
3.0
2.8
2.6
2.4
2.2
0
Expt. (N=100)
Control (N=98)
Pre (Time 1)
Pre (Time 2)
Post (Time 3)
5 mos.
5 mos.

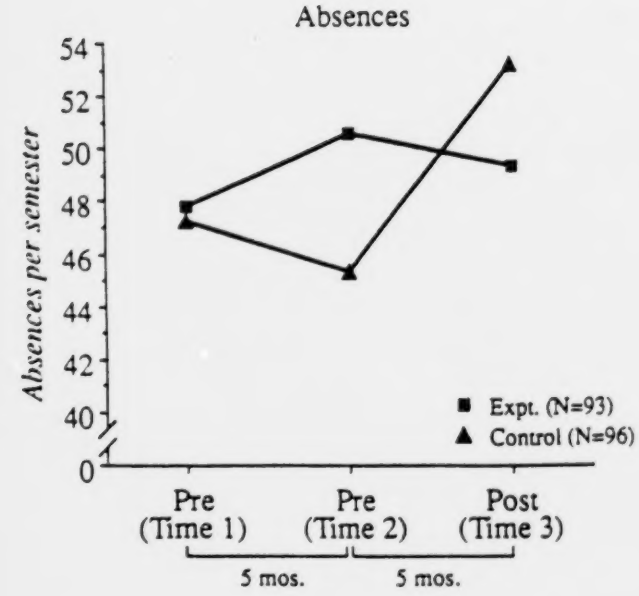
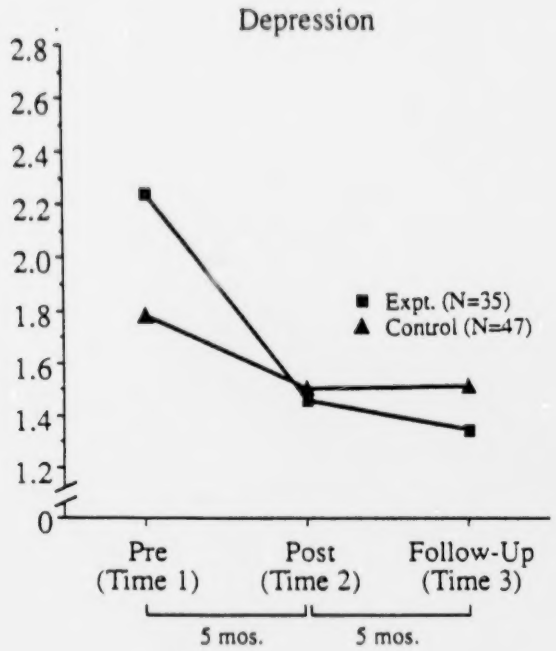

Absences
Absences per semester
54
52
50
48
46
44
42
40
0
Expt. (N=93)
Control (N=96)
Pre (Time 1)
Pre (Time 2)
Post (Time 3)
5 mos.
5 mos.

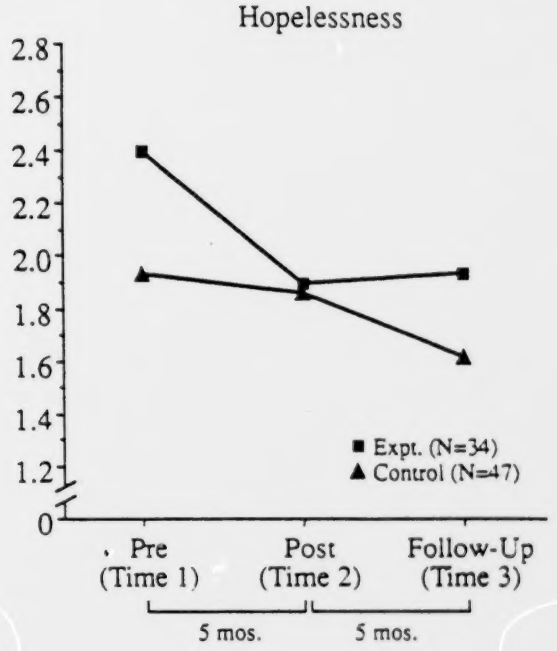
Figure 4. Experimental vs. Control Group for Emotional Distress
(Years 1 and 2 of Implementation)

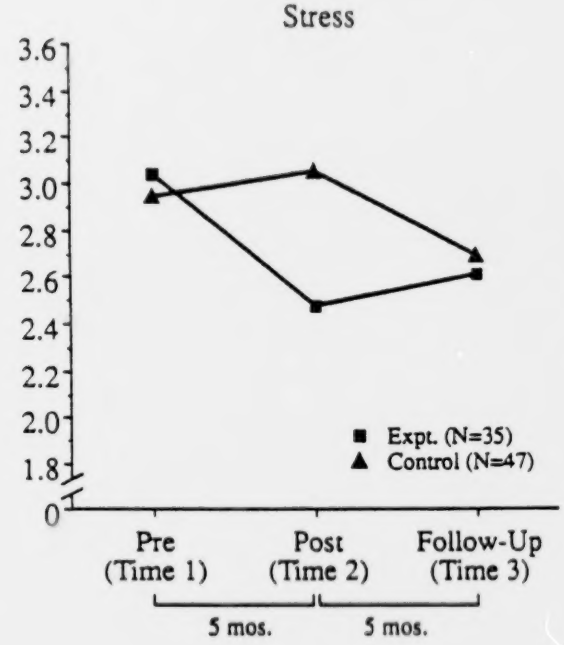
Figure 5. Experimental vs. Control Group Outcomes for Emotional Distress
(Year 2, Refined Intervention)

Refined PGC Model

2nd Full Year of Project







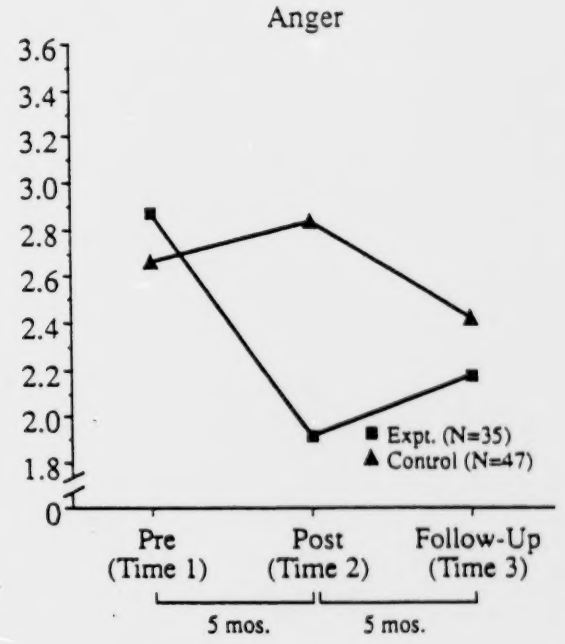


TABLE 1. -- Experiment vs Control Pre-Intervention Demographic and Descriptive Characteristics N=224.

	EXP (n=114)	Control (n=110)	t(X^2)	df	p
Age	15.9	15.6	2.41	212.44	.017
% Male	51.8%	63.3%	3.04	1	.081
Minorities	26.0%	21.9%	0.26	1	.607
School Factors					
Absences	54.52	45.27	2.13	203.51	.034
Grade Point Average	1.38	1.65	-2.61	206.99	.010
School Strain	3.04	2.57	2.61	221.74	.010
Favorite Teacher Support	1.98	1.52	2.62	217.24	.009
Family Characteristics					
Family Distress	3.00	4.27	-2.26	219.82	.025
Parent Support	3.42	5.17	-3.53	211.52	.001
Total Network Support	2.80	4.05	-3.60	206.72	.000
Drug Use					
Drug Involvement	0.94	0.40	4.55	164.85	.000
Adverse Consequences	0.93	0.39	4.64	173.97	.000
Control Problems	0.96	0.42	3.86	157.59	.000
Frequency of Use	0.68	0.38	3.71	193.90	.000
Emotional Distress					
Suicide Ideation	0.98	0.60	1.75	148.16	.081
Depression	2.36	1.85	2.80	221.93	.006
Self-Esteem	3.28	3.93	-3.53	220.00	.000
Hopeless	2.73	2.17	2.83	218.83	.015
Anger	2.99	2.74	1.18	216.34	.241

TABLE 2. -- Trend Analyses for Adolescent Drug Involvement

	df	MS	f	p
Drug Use Co Problems				
Linear	1, 172	1.51	3.65	.058
Quadratic	1, 172	0.50	2.12	.147
Adverse Drug Consequences				
Linear	1, 174	2.53	6.68	.010
Quadratic	1, 174	0.82	4.81	.030
Smoking				
Linear	1, 179	8.95	4.23	.041
Quadratic	1, 179	0.20	0.21	.649
Alcohol Use				
Linear	1, 180	1.15	0.30	.582
Quadratic	1, 180	2.60	1.28	.260
Marijuana Use				
Linear	1, 178	0.14	0.11	.738
Quadratic	1, 178	0.16	0.24	.625
Hard Drug Use				
Linear	1, 180	2.74	2.62	.107
Quadratic	1, 180	0.75	0.78	.377

TABLE 3. -- Trend Analyses for School Performance

	df	MS	f	p
Absences (< 130)				
Linear	1, 187	450.56	0.84	.361
Quadratic	1, 187	1493.01	4.69	.032
Grade Point Average				
Linear	1, 196	2.41	6.46	.012
Quadratic	1, 196	4.14	13.65	.000
Earned Credits				
Linear	1, 196	0.01	0.01	.909
Quadratic	1, 196	1.19	3.13	.078

TABLE 4. -- Trend Analyses for Emotional Distress

	df	MS	f	p
Depression				
Linear	1, 191	1.64	1.91	.169
Quadratic	1, 191	0.00	0.01	.933
Stress				
Linear	1, 186	0.84	1.20	.276
Quadratic	1, 186	2.66	3.51	.062
Hopelessness				
Linear	1, 186	0.45	0.39	.534
Quadratic	1, 186	0.29	0.36	.549
Anger				
Linear	1, 185	0.41	0.31	.581
Quadratic	1, 185	3.48	3.64	.058